

BATTERY CALCULATIONS
FAP-001-69

ITEM	DESCRIPTION	QTY	STANDBY CURRENT PER ITEM (AMPS)	TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER ITEM (AMPS)	TOTAL ALARM CURRENT PER ITEM
CP-35	FACP w/2ZN'S + AUD	1	0.1750	0.1750	0.5010	0.5010
PS-35	POWER SUPPLY	1	0.0000	0.0000	0.0000	0.0000
BC-35	BATTERY CHARGER	1	0.0450	0.0450	0.0300	0.0300
AA-30U	CLASS B BELL MODULE	-	0.0065	0.0000	0.0300	0.0000
SM-30	SWITCH MODULE	1	0.0000	0.0000	0.0450	0.0450
SR-30	2 RELAY MODULE	2	0.0000	0.0000	0.0450	0.0900
ZN-34US	SUPERVISORY MODULE	2	0.0100	0.0200	0.1100	0.2200
ZU-35	ZONE MODULE	3	0.0090	0.0270	0.1100	0.3300
ZU-35DS	ZONE MODULE/SD's	-	0.0090	0.0000	0.1100	0.0000
SMOKE	SMOKE DETECTOR	6	0.0001	0.0006	0.0010	0.0060
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	1	0.0020	0.0020	0.0000	0.0000
PS-5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						0.6900
TOTAL SYSTEM CURRENT			STANDBY	0.4276	ALARM	2.0870

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) +
(TOT. ALARM CURRENT X ALARM TIME)} X 1.25

MIN. BATTERY CAPACITY = {(0.4276 A X 24 HR) + (2.087A X 0.083 HR)} X 1.25

MIN. BATTERY CAPACITY = {10.2624 Ahr + 0.1732 Ahr} X 1.25 = 13.0445 Ahr

NOTIFICATION APPLIANCE CIRCUIT
VOLTAGE DROP & POWER REQUIREMENTS

CKT AV1: 69				
DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM	
WHEELLOCK STROBE 15 cd	-	0.5010	0.0000	
WHEELLOCK HORN/STROBE 15cd	-	0.0000	0.0000	
WHEELLOCK STROBE 30 cd	-	0.0300	0.0000	
WHEELLOCK HORN/STROBE 30 cd	-	0.0450	0.0000	
WHEELLOCK STROBE 75 cd	-	0.0210	0.0000	
WHEELLOCK HORN/STROBE 75 cd	-	0.1100	0.0000	
WHEELLOCK STROBE 110 cd	2	0.2200	0.4400	
WHEELLOCK HORN/STROBE 110 cd	-	0.1750	0.0000	
WHEELLOCK HORN	-	0.0000	0.0000	
AUTOCALL BELL/STROBE 75 cd	5	0.0500	0.2500	
TOTAL NOTIFICATION APPLIANCES CURRENT			0.6900	

VOLTAGE DROP (VD) CALCULATIONS

VD = {(I) (D) (21.6)}/CM

WHERE: I = CIRCUIT CURRENT

D = CONDUCTOR LENGTH (FT) ONE WAY

21.6 = CONSTANT

CM = WIRE CROSS-SECTIONAL AREA (CIRCULAR MILS)

VD = {(0.69 A) (200FT) (21.64)}/4110 = 0.725V

%VD = {0.725V / 24V} X 100 = 3.022%

REMAINING VOLTS = 23.275

WIRE SIZE	CIRCULAR MILS
12AWG	6530
14AWG	4110
16AWG	2580
18AWG	1620
20AWG	1020

FIRE ALARM SYSTEM
FUNCTION CHART

SYSTEM EVENT

	RESPONSE					
	ANNUNCIATE AT FACU	FIRE SIGNAL TO RECEIVER	TROUBLE SIGNAL TO LBNL RECEIVER	SUPERVISORY SIGNAL TO LBNL RECEIVER	OPERATE 69 NOTIFICATION APPLIANCES	AHU-10 SHUTDOWN
FIRE CALL BOX	●	●			●	
SMOKE DETECTOR	●	●			●	
AHU-10 DUCT SMOKE DETECTOR	●	●			●	●
FIRE SPRINKLER WATERFLOW SWITCH	●	●			●	
FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●		
AC POWER FAILURE	●		●			
SYSTEM FAULT	●		●			

BLDG 69 FIRE ALARM
FUNCTION CHART & CALCULATIONS

UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

DRAWN BY	LDD	DATE	10/01/2013
CHECKED BY	LDD		10/01/2013
APPROVED BY	MCD		10/01/2013

SCALE AS NOTED	
DRAWING NO. 4B69E070_	SHEET
PROJECT NO. 000000	1 OF 1

PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)	AS BUILT — — 10/01/13						
ISSUE	(PROGRESS, ESTIMATE, BD, CONSTRUCTION, CONFORMED, REVISION, RECORD)	REVISION NUMBER	DRAWN BY	CHECKED BY	APP'D BY	DATE	REMARKS
—		LDD	LDD	MCD	10/01/13		AS BUILT